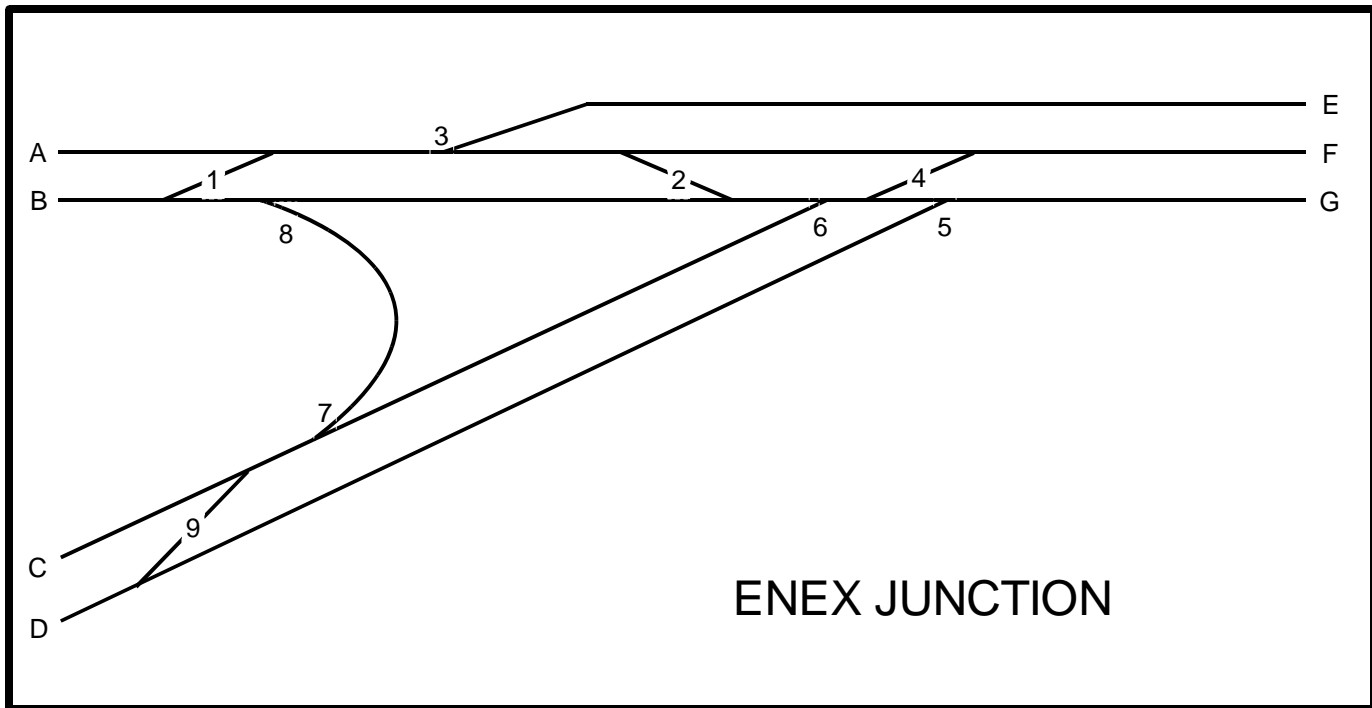


Example of N-X turnout control using the NCE Mini-Panel



Momentary push buttons are at locations A-G
Turnout decoder addresses are numbered 1-9

To align turnouts through the junction press and hold the button corresponding to the exit track while holding the button for the entrance track.

Brief description of the Mini-Panel program:

When the Mini-Panel detects that one of the buttons (A-G) is pushed it starts scanning for the press of any second button that results in a valid route through the junction. For example A and B pressed at the same time is not valid but B and F is a valid route. When a valid route is detected the panel issues the proper commands to align the appropriate turnouts for the route.

In this case of B and F it would be:

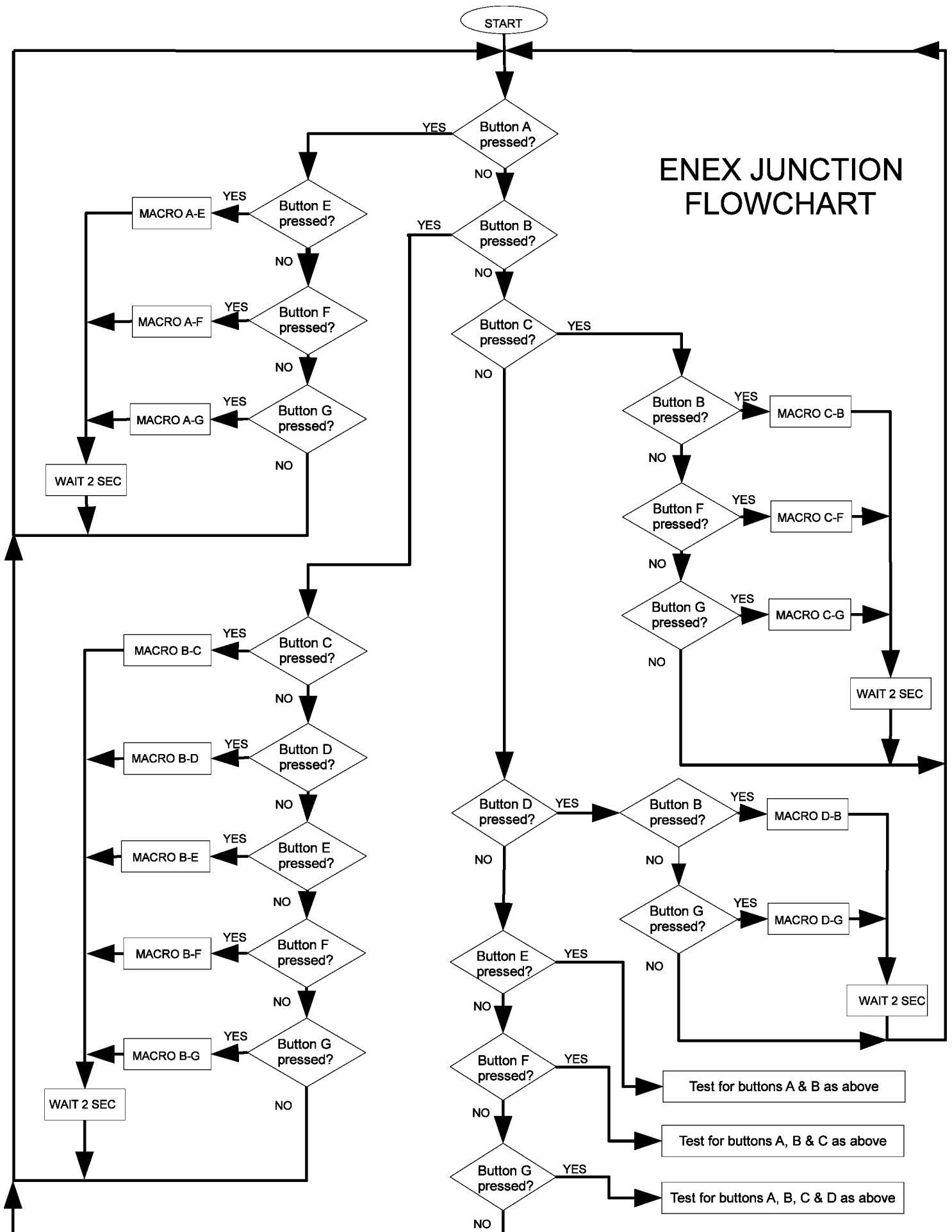
- 1->Reverse
- 3->Normal
- 2->normal
- 4->normal

The following page(s) illustrate the Mini-Panel programming of our mythical ENEX Junction.

A flow chart of the mini-panel "program" follows in the next page

START

ENEX JUNCTION FLOWCHART



For the purpose of this example:

N = The straight through route on a turnout

R = The diverging or curved route through a turnout

Connections to the Mini-Panel:

Button A is connected to terminal 1

Button B is connected to terminal 2

Button C is connected to terminal 3

Button D is connected to terminal 4

Button E is connected to terminal 5

Button F is connected to terminal 6

Button G is connected to terminal 7

Accessory Addresses:

Accessory addresses correspond to the numbers on the junction drawing

Macros:

The Mini-Panel doesn't have enough memory to save all the accessory commands necessary for a junction with as many routes through it as our ENEX junction so we will use macros in the command station for each route.

Routes required through the junction:

Route	Reverse Route	Macro #	Macro Contents
A-E	E-A	101	1=N, 3=R
A-F	F-A	102	1,2,3,4=N
A-G	G-A	103	1,3,4,5,6=N, 2=R
B-C	C-B	104	1,9=N, 7,8=R
B-D	D-B	105	1=N, 7,8,9=R
B-E	E-B	106	1,3=R
B-F	F-B	107	2,3,4=N, 1=R
B-G	G-B	108	1,2,4,5,6,8=N
C-F	F-C	109	7,9=N, 4,6=R
C-G	G-C	110	4,5,7,9=N, 6=R
D-G	G-D	111	9=N, 5=R

Mini-Panel Program Worksheet

The default Mini-Panel Cab Bus address is 3, it can be changed only via the SETUP port on the Mini-Panel

Memory Address	Name	New value	Def. Value	Comment
1	Debounce		5	Do not change – factory set
2	Unused		0	Ignored by the Mini-Panel
3	Continuous memory	1	0	Input number at which instructions start to flow continuously from input step 4 to then next input step 1
4	Disable input	1	0	Input number at and above which the grounding an input will not cause execution of the input's instructions
5	Wait Interrupt #		0	Input number that can be used to interrupt any/all wait commands when grounded.
6	Software version		200	Cannot be changed
7	DCC Manufacturer		11	11= NCE

We want to use all of the mini-panel memory as continuous so we set memory location 3 = 1.

We don't want pushing a single button to automatically trigger any commands, we only want to read them during execution of our program so we set memory location 4=1 to disable 'automatic' reading of the buttons. The status of these inputs can now only be read by the “skip” and “wait” commands.

V1.0 Mini Panel Instructions/Commands					
Accessory	Loco	Signal	Delay/Wait	Ops Prog Loc	Other
Accy	Sel Loco	Signal	Delay 4	Sel Loco	Link to #
Macro	Forward (128)		Delay 1/4	CV	Skip if # Gnd
	Reverse (128)		Wait # Gnd	CV Data	Skip if # Open
	Forward (28)		Wait # Open		NOP
	Reverse (28)				Terminate
	Functions 0-4				
	Functions 5-8				

Input-step	Step	Instruction	Value or Input #	Comment
1	1	Skip if open	1	Skip if button A not pressed
	2	Link	5	Button A pressed, go check buttons E,F,G
	3	Skip if open	2	Skip if button B not pressed
	4	Link	8	Button B pressed, go check buttons C,D,E,F,G
2	1	Skip if open	3	Skip if button C not pressed
	2	Link	13	Button C pressed, go check buttons B,F,G
	3	Skip if open	4	Skip if button D not pressed
	4	Link	16	Button D pressed, go check buttons B,G
3	1	Skip if open	5	Skip if button E not pressed
	2	Link	18	Button E pressed, go check buttons A,B
	3	Skip if open	6	Skip if button F not pressed
	4	Link	20	Button F pressed, go check buttons A,B,C
4	1	Skip if open	7	Skip if button G not pressed
	2	Link	23	Button G pressed, go check buttons A,B,C,D
	3	Link	1	Loop back to start over
	4			
5	1	Skip if Ground	5	Skip if button E pressed
	2	Link	6	Not pressed go test button F
	3	Macro	101	A->E
	4	Link	31	Done
6	1	Skip if Ground	6	Skip if button F pressed
	2	Link	7	Not pressed go test button G
	3	Macro	102	A->F
	4	Link	31	Done
7	1	Skip if Ground	7	Skip if button G pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	103	A->G
	4	Link	31	Done
8	1	Skip if Ground	3	Skip if button C pressed
	2	Link	9	Not pressed go test button D
	3	Macro	104	B->C
	4	Link	31	Done

Input-step	Step	Instruction	Value or Input #	Comment
9	1	Skip if Ground	4	Skip if button D pressed
	2	Link	10	Not pressed go test button E
	3	Macro	105	B->D
	4	Link	31	Done
10	1	Skip if Ground	5	Skip if button E pressed
	2	Link	11	Not pressed go test button F
	3	Macro	106	B->E
	4	Link	31	Done
11	1	Skip if Ground	6	Skip if button F pressed
	2	Link	12	Not pressed go test button G
	3	Macro	107	B->F
	4	Link	31	Done
12	1	Skip if Ground	7	Skip if button G pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	108	B->G
	4	Link	31	Done
13	1	Skip if Ground	2	Skip if button B pressed
	2	Link	14	Not pressed go test button F
	3	Macro	104	C->B
	4	Link	31	Done
14	1	Skip if Ground	6	Skip if button F pressed
	2	Link	15	Not pressed go test button G
	3	Macro	109	C->F
	4	Link	31	Done
15	1	Skip if Ground	7	Skip if button G pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	110	C->G
	4	Link	31	Done
16	1	Skip if Ground	2	Skip if button B pressed
	2	Link	17	Not pressed go test button G
	3	Macro	105	D->B
	4	Link	31	Done

Input-step	Step	Instruction	Value or Input #	Comment
17	1	Skip if Ground	7	Skip if button G pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	111	G->D
	4	Link	31	Done
18	1	Skip if Ground	1	Skip if button A pressed
	2	Link	19	Not pressed go test button B
	3	Macro	101	E->A
	4	Link	31	Wait 2 seconds than start over
19	1	Skip if Ground	2	Skip if button B pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	106	E->B
	4	Link	31	Done
20	1	Skip if Ground	1	Skip if button A pressed
	2	Link	21	Not pressed go test button B
	3	Macro	102	F->A
	4	Link	31	Done
21	1	Skip if Ground	2	Skip if button B pressed
	2	Link	22	Not pressed go test button C
	3	Macro	107	F->B
	4	Link	31	Done
22	1	Skip if Ground	3	Skip if button C pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	109	F->C
	4	Link	31	Done
23	1	Skip if Ground	1	Skip if button A pressed
	2	Link	24	Not pressed go test button B
	3	Macro	103	G->A
	4	Link	31	Done
24	1	Skip if Ground	2	Skip if button B pressed
	2	Link	25	Not pressed go test button C
	3	Macro	108	G->B
	4	Link	31	Done

Input-step	Step	Instruction	Value or Input #	Comment
25	1	Skip if Ground	3	Skip if button C pressed
	2	Link	26	Not pressed go test button D
	3	Macro	110	G->C
	4	Link	31	Done
26	1	Skip if Ground	4	Skip if button D pressed
	2	Link	1	Nothing pressed, start over
	3	Macro	111	G->D
	4	Link	31	Done
27	1			
	2			
	3			
	4			
28	1			
	2			
	3			
	4			
29	1			
	2			
	3			
	4			
30	1			
	2			
	3			
	4			
Input 31 instructions are automatically executed at Mini-Panel power-up				
31	1	Delay $\frac{1}{4}$	8	Wait 2 seconds
	2	Link	1	Start over
	3			
	4			